

# Public Awareness towards Environmental Issues in Turkey

Hasan AKCA

Gaziosmanpasa University, Faculty of Agriculture  
Department of Agricultural Economics  
Tokat, Turkey  
akcahasan@yahoo.com

Cetin KAPLAN

Gaziosmanpasa University  
Dincerler School of Tourism and Hotel Management,  
Tokat, Turkey  
kaplancetin@hotmail.com

Murat SAYILI

Gaziosmanpasa University, Faculty of Agriculture  
Department of Agricultural Economics  
Tokat, Turkey  
muratsayili@yahoo.com

**Abstract:** This study presents public awareness of environmental issues in Tokat province of Turkey. The effective sample size was 300. Questionnaire was carried out between January and May 2008. Chi-square test ( $\chi^2$ ) was used while analyzing the relationship between socio-economic characteristics and environmental conscious. Statistically significant relationship was found between separating domestic waste at home and education level ( $\chi^2 = 19.493$ ,  $df=12$ ,  $P=0.077$ ). Similarly, there was a statistically significant relationship between gender and separating domestic waste at home ( $\chi^2 = 8.276$ ,  $df=3$ ,  $P=0.041$ ). This study revealed that no statistically significant relationship was found between occupation of the respondents and separating domestic waste at home ( $\chi^2 = 25.039$ ,  $df=18$ ,  $P=0.124$ ), nor between area of residence and separating domestic waste at home ( $\chi^2 = 13.640$ ,  $df=9$ ,  $P=0.136$ ).

**Keywords:** Environmental issues, public awareness, Turkey

## Introduction

Up to last quarter of 19<sup>th</sup> century, environmental impact of economic activities has been small enough for the natural environment to recover unaided. However, impact of human beings on the environment has grown rapidly and steadily since the industrial revolution. Recently, the environmental impact of human activity has increased beyond the Earth's ability to recover (RICOH 2003). At the time of the Stockholm World Environment Congress in 1972, human beings were mainly concerned about environmental pollution damage to nature. Afterwards, people were gradually aware of the damage to human health. Consequently, more and more people became concerned about the environment (Xi et al. 1998). After Chernobyl disaster in 1986, the environmental movement accelerated its global-local responsiveness. Today's environmental movement has matured. It started out saying: Think globally, act locally. Now it's: Think and act locally; think and act globally (Warshal 2001).

Climate change, desertification, deforestation, depletion of the ozone layer, transboundary air pollution, solid waste management, sea pollution, transport of hazardous waste, over-consumption of natural resources, loss of bio diversity especially in the rain forests of the Amazon, Africa and Asia are examples of environmental issues that the world faces (Decamps 2000, Joubert 2001).

Development of environmental awareness in Turkey has coincided with the development of democracy and human rights. The unifying dimension of environmentalism in Turkey is significant. Under mottos such as "One World" or "We are all in the same boat", members of different cultural backgrounds have gathered on the same platform to work for the protection of the environment, joining their forces and energies for a better planet and brighter future (Ozdemir 2005).

Tokat province was chosen as research area because it was one of the 17 provincial centres (out of 81 provinces) with high concentrations of sulphur dioxide ( $SO_2$ ) in Turkey. According to  $SO_2$  concentrations, obtained from the measurement stations in January 2007 compared to the previous January, Target Limit Value ( $150 \mu g/m^3$ ) was exceeded in Tokat while First Warning Level Limit Value ( $700 \mu g/m^3$ ) was not exceeded

(TURKSTAT 2007). On the other hand, some major projects have been implemented by local governments to solve environmental problems in the city and to live a clean and healthy environment for future generations. Number of studies analysing the relationship between socio-demographic characteristics of both urban and rural dwellers and environmental issues are very limited. Therefore, this study aims at explaining public awareness towards environmental issues in Tokat province of Turkey.

## Material and Methods

A survey of randomly selected people living in Tokat province (828 027 residents) of Turkey was conducted to determine their awareness and knowledge of sources of environment. The survey delivered 320 questionnaires and the effective sample size was 300. It was conducted in the months of January-May 2008.

Chi-square test ( $\chi^2$ ) was used while analyzing the relationship between socio-economic characteristics of people and environmental conscious. A 0.05 level of significance was employed for all tests in the study. Algebraically  $\chi^2$  test statistic is given as follows (Gujarati 1995, Mirer 1995):

$$\chi^2 = \sum_{i=1}^k \frac{(O_i - E_i)^2}{E_i}$$

Where  $O_i$  is the observed frequency in class or interval  $i$  and  $E_i$  is the frequency expected in class  $i$  on the basis of the hypothesized distribution, say, the normal. If the null hypothesis is correct,  $\chi^2$  has a chi-square distribution with  $(r-1)(c-1)$  degrees of freedom (df), where  $r$  is the number of rows and  $c$  is the number of columns in the main body of the contingency table.

## Results and Discussion

Among the sample population, 62.3% were male. The professions of the respondents were government employees (17.7%), retired people (6.4%), housewife (15.3%), workers in industry and manufacturing (15.0%), student (20.3%), people engaged in agriculture/fishing/livestock (12.3%), and business/tradesman (13.0%).

Educational backgrounds of the questioned people were primary school (15.7%), secondary school (14.3%), high school (31.7%), vocational college and faculty (31.0%), and postgraduates degrees (Master and PhD) (7.3%).

Nearly 70% of the respondents live in city centre. The rest live in district (11%), town (8%), and village (11%).

In the study, 13 environmental problems were listed and respondents were asked to select the most serious problems at local, country and global level (Tab. 1).

Environmental Problems	Tokat	Turkey	World
Garbage Problem	81.3	32.3	39.3
Air Pollution	63.3	43.3	50.6
Water Pollution	82.6	47.3	39.0
Noise Pollution	58.3	49.6	39.3
Soil Pollution due to excess agrochemicals usage	47.6	61.6	34.0
Use of Agricultural Lands for Different Aims	50.0	64.0	30.0
Unplanned Urbanisation	69.6	59.3	21.0
Destroying Natural Resources	49.0	40.6	41.0
Global Warming	32.0	44.6	82.3
Ozone Depletion	26.3	36.0	81.3
Radiation Problem	18.0	45.0	69.6
Devastation	18.3	30.0	63.0
Erosion	36.0	69.0	51.3

Table 1: Most serious environmental problems at local, country and the world level (%)

According to respondents, global warming, ozone depletion, radiation problem, and devastation were the most serious environmental problems in the world. As far as Turkey is concerned, erosion, use of agricultural lands for different aims, and soil pollution due to excess agrochemical use are main environmental problems at country level while water pollution, garbage problem, and unplanned urbanisation were severe environmental problems at local level. These results are parallel to the literature. For example, Onder (2006) stated that the most serious environmental problems are ozone depletion and global warming in the world; unplanned urbanisation and depletion of natural resources in Turkey. Esengun et al. (2006) questioned 16 governmental and NGOs in

Tokat province to determine their views on environmental problems. Findings indicated that air pollution is the most environmental concern, followed by domestic waste, soil pollution, lack of a central control system, illegal construction, unplanned organisation, lack of green areas, water pollution, waste water, use of agricultural lands for unsuitable aims, deforestation, and noise pollution. Inadequate financial resources, lack of trained personnel and inadequate environmental legislation are the main weaknesses in dealing with environmental issues.

The authors asked people whether they know "World Environment Day (June 5)" or not. More than three-fourths of respondents answered with "no" and only 22.7% with "yes". Another question was "whether being heard a campaign that is a pine tree for people who collect 20 batteries" or not?. Only 37.7% of the respondents said they heard this campaign but 62.3% did not heard.

Respondents were asked to identify reasons for water pollution in "Yesilirmak River" in Tokat province. According to respondents, water pollution is associated with litter storing place along the river (41.3%) and waste of leather processing plants established near the river (32.0%). Other pollutants were animal wastes caused by livestock farms (12.0%) and domestic wastes (9.3%). The remaining (5.4%) said they had no idea.

A significant number of interviewees say that obeying hunting rules (74.3%), destruction of forest areas (58.3%), agrochemicals (52.0%) and decreasing number of wetland (22.0%) are most important factors affecting decrease in the number of wild animals in the research area.

People were asked: "Which actions can be active in environmental conscious?" People chose more than option for this question. Education within the family (74.6%) and at school (71.3%), and television & radio programs (68.6%) came first, second and third on the list. Other important actions were determined as magazine & newspaper (38.0%), NGO activities (32.6%), legal regulations (20.0%), and training at working place (20.3%).

Respondents were asked to identify the actors having power for environmental conservation. Questioned people ranked them as municipality (1<sup>st</sup>), governorship of the province (2<sup>nd</sup>), family (3<sup>rd</sup>), NGOs (4<sup>th</sup>), and Media (5<sup>th</sup>), University (6<sup>th</sup>), and Health Organisations (7<sup>th</sup>). Only 4.6% said they had no idea.

To determine the attitudes of the people towards environmental issues following question "How would you like to be a part of the environmental conservation activities?" was asked. More than half of the respondents (52.7%) indicated that they could attend environmental protection activities voluntarily. Nearly one-fifth (22.3%) of the people do not want to attend any environmental conservation activities. In the sample, 21.3% answered "donation". Only 3.7% of the sample said they could pay extra tax. In a study of rural population and environmental relations, Gokce (1997) found that 57.9% was willing to donate part of his income, 35.0% is willing to give extra tax and 68.1% thought government should meet the expenses.

The question "what is your reaction against people who pollute the environment?" was asked the sample in order to probe their environmental attitude towards environmental issues. Nearly two-thirds of the respondents (64.7%) said that they prefer warning the people polluting the environment politely while 22.7% do not warn the polluters. The rest (12.6%) prefer to make formal complaints to government administrators or legal institutions.

Television, newspaper, and internet were the most common used information sources towards environmental issues by respondents (Tab. 2). This was line with previous studies (Onder 2006, Ostman & Parker 1985, Chan 1998, Haron et al. 2005).

Information Source (*)	Number	%
Newspaper	195	65.0
Journal	60	20.0
Television	281	93.6
Radio	98	32.6
Extension staff	30	10.0
Internet	125	41.6
Friend	84	28.0
Governmental Organisations	18	6.0
NGOs	34	11.3
School	43	14.3
Brochure	33	11.0

Table 2: Information sources about environmental issues

(\*) More than one answer

Particularly television was shown to be a powerful instrument for changing public attitudes (Abdul-Wahab 2008). Christine (1990) found that news programs were effective at increasing level of environmental knowledge among those who watched the program. Schultz (1994) reported the role of mass media in recognition of environmental problems.

Respondents were asked to whether they heart and know meaning of 11 environmental concepts (Tab. 3).

The issues people heard and knew most were recycling (80.00%) and organic farming (79.33%). Sustainable development (39.67%), rain forests (39.33%), acid rain (39.33%), and Rio Conference (38.67%) were issues which a high proportion of questioned people heard but did not know its meaning. Great majority of the respondents (85.33%) had not heard of externality before.

Concepts	I heard and know its meaning	I heard but do not know its meaning	I did not hear it
Sustainable Development	44.67	39.67	15.66
Organic Farming	79.33	11.67	9.00
Rain Forests	17.67	39.33	43.00
Green Peace	24.00	32.67	43.33
Acid Rain	19.33	39.33	41.34
Externality	4.67	10.00	85.33
Recycling	80.00	9.33	10.67
Brundland Report	4.33	27.00	68.67
Rio Conference	9.33	38.67	52.00
Ecosystem	56.67	10.33	33.00
Biodiversity	54.33	24.00	21.67

Table 3: Whether knowing meaning of some words related to environmental issues (%)

People were asked to choose between scenarios where (A) establishment of a factory first, considering the environment later; (B) considering the environment first, establishment of a factory later; and (C) establishment of a factory and environmental protection have the same priority. The results showed that 62.67% of the respondents consider the environment a high priority, while 21.00% of the people chose establishment of a factory as a top priority. Only 16.33% of the sampled people chose both first. This means that most of the questioned people reject approaches based in ignoring environmental conservation while establishment of a factory in order to produce new products and create new employment opportunity for unemployed people.

Literature review shows that public awareness of environmental problems has typically been associated with different socio-demographic variables such as age, income, social statuses, gender, education, area of residency (rural or urban), occupation, origin (immigrant or non-immigrant), and political ideology (Girdner & Akis 1996, Stern et al. 1993, Guagnano & Marke 1995, Swarnakar & Sharma 2006, Akca et al. 2007). It was hypothesized that there is a relationship between separating domestic waste at home and four demographic variables (gender, residence area, occupation and education). Statistically significant relationship was found between separating domestic waste at home and education level of respondents ( $\chi^2 = 19.493$ ,  $df=12$ ,  $P=0.077$ ). This was line with literature. Scott & Willits (1994) found that environmental attitudes and behaviour are strongly related to education. Similarly, there was a statistically significant relationship between gender and separating domestic waste at home ( $\chi^2 = 8.276$ ,  $df=3$ ,  $P=0.041$ ). However, Girdner & Akis (1996) did not find any relationship between sex of the respondent and reusing empty bottles. No statistically significant relationship was found between occupation of the respondents and separating domestic waste at home ( $\chi^2 = 25.039$ ,  $df=18$ ,  $P=0.124$ ), nor between area of residence and separating domestic waste at home ( $\chi^2 = 13.640$ ,  $df=9$ ,  $P=0.136$ ).

## Conclusion

Today, people living in both urban and rural areas are paying more attention to activities that reduce damage to the global environment, including the sorting of waste, recycling, and prevention of global warming. Manufacturers face such challenges as promoting smaller products with longer lifecycles, energy conservation, and resource recycling, as well as providing the maximum benefit to society and companies with minimum resources. Global companies as well are expected to support and promote the awareness of environmental conservation in developing countries and regions so that they can achieve economic progress with minimum environmental impact (RICOH 2003). In this context, there is a need to explain what the situation is in Tokat province in terms of environmental protection. In 2005, three Municipalities in Tokat province prepared Infrastructure Projects focusing on "Rehabilitation of Old Landfill and Left Flow Direction of Yesilirmak River in Central County of Tokat"; "Rehabilitation and Extension of Drinking Water Supply, Transmission and Storage Facilities in Tuzhal County"; and "Elimination of Nitrogen in the Refuse Water in Erbaa County through Research and Design". They were awarded by the EU in the context of Regional Development Programme in 2006. Another study is to establish a Solid Waste Storing and Processing Plant in Tokat province. Municipalities signed a finance agreement through credit with international sources. In addition, project related to supplying natural gas to Tokat started in April 2007 instead of using coal and wood for heating. It is expected that use of natural gas in the future will significantly reduce pollution in terms of Sulphur Dioxide (SO<sub>2</sub>) and Particulate

Matter (PM). On the other hand, Turkish government started to implement KOYDES Project in order to increase environmental quality of rural areas. In the context, many projects that cover supplying clean drinking water to 148 villages, development of soil and small water resources in 12 villages, sewerage systems in 33 villages have been carried out local administrations. It can be said that Tokat province would solve biggest parts of the major environmental problems and breathe clean air if these projects implemented successfully in both rural and urban areas in the short or medium terms.

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